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to a modification if not an abandonment of authority in religion. There is only one ultimate authority in spiritual religion, and this is the free spirit of man which finds itself in life with God. Lastly, the religion of spirit will be not only theistic, but Christian. "I am moved more by my vision of the personality of Jesus than I am by my thought of his doctrines. . . . As Jesus Christ was perfect man, so also, and for that very reason, was he the revelation and realization of the Divine Father, . . . therefore Mediator and Saviour."

Eloquent, Christian, of philosophic breadth and insight, but a few minor points to be found fault with, the book could hardly be praised too highly, and should be read by students and preachers everywhere.

GEORGE B. FOSTER.

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A NEW NATURAL THEOLOGY BASED UPON THE DOCTRINE OF EVOLUTION. By J. MORRIS. London: Rivington. 1896. Pp. 125.

THIS is a noteworthy treatise. Its author looks upon the doctrine of evolution as now fully established, and believes that it can be made the basis of a "new natural theology." The older forms of the argument from nature to the existence of God are supposed to be no longer tenable. Our better knowledge of nature, obtained through the doctrine of evolution, renders important changes in that argument necessary. Paley's reasoning is vulnerable at many points, and no modification of it by Janet, Momerie, or Flint is worthy of complete acceptance. As resting upon evidences of order and design in the phenomena of nature subject to our inspection, it is outworn and ready to be forgotten. For the present phenomena of nature have an ancestry. They are not products finished and fixed and explicable as results of immediate action by the Primal Energy, but they are parts of a process, an evolution, which has been going on through periods of time too vast for computation, which is still going on, and which may perhaps never come to an end.

The first part of this treatise is therefore a criticism and rejection of the theistic argument, in so far as it is based on evidences of order and indications of design in nature. For as soon as that argument is seen to be outworn and ineffective there must be need of a new and better one which it is the object of this discussion to furnish. But that new and better one must of course rest upon the science of today,

and the science of today rests upon the doctrine of evolution. Hence "the only true method of procedure is," in the opinion of our author, "to clear from the mind all ideas of design, and follow the teaching of evolution whithersoever it leads. Truth cannot be lost ; and whatever elements of truth the argument of design may contain will reappear, and more readily gain assent, when reset in the ideas appropriate to our more advanced knowledge " (p. 22).

We do not propose to review the author's criticism of the argument from order and design in nature. It will be sufficient for our purpose to let him state in his own words the principal objection to that argument, premising only that it seems to us to bear with almost equal force against his own reasoning. Having referred to a few of the most striking examples of apparent design and prevision, such as Professor Flint and others have supposed to furnish evidence of the existence of God, Mr. Morris remarks : "We cannot, with all these examples before us, overlook the force of the objection that precisely the same evolution order which produces these apparent previsions produces also orders of phenomena which are prejudicial to the welfare of man. Every year has its tale of disasters from earthquakes, tempests, and floods ; its plaints of misfortunes, dearths, and famines ; and its death-roll from plagues, epidemics, and wars. And it is the existence of these which forbids us to see in apparent previsions, or in the general uses and relations of things, direct evidences of wisdom, benevolence and goodness. Nature, if prodigal of bounties, is also remorseless ; the system of evolution is as cruel as it is kind, as passionless as it is benign. Nor do these opposites admit of any reconciliation " (p. 44).

It is only, as our author believes, by looking away from results as they now appear in life and nature to processes and their tendency, that such opposites can be harmonized in a divine purpose revealed to us by evolution. We may look backward to learn the history of nature and in the prophetic trend of that history anticipate a full revelation of God in the future. "Not," he says, "by tracing the adaptation of means to ends, nor by reasoning from the order and adjustment of things to an end, but by inferring the end from the nature of the processes that lead towards the end, can we hope to determine whether the order of evolution justifies belief in a God who is the Creator and Conservator, the Source and Maintainer of the universe, the Father and Preserver of the race of man " (p. 47). Again, near the close of his treatise Mr. Morris says, "Man coördinates the relations of the universe to secure certain ends ; and, following out the analogy in this

direction, instead of looking for the evidences of an Intelligence in the coördination of the relations of the universe, we look for them in the end which the coördinated relations subserve. We come into view of this end, however, not as in the argument of design, by observing in particular pieces of mechanism the adaptation of means to ends, nor yet by reasoning from order to an end, but by discovering a purpose in the character of the processes which lead towards the end" (p. 294). We have never supposed that the men who believe in the soundness of the argument from order and design were indifferent to the working of coördinated powers or the tendency of natural processes towards a worthy end. They do, however, believe that the provisional and transitional results of evolution are suggestive of a Divine Hand, as well as the same things considered as stages of a development, as parts of the great movement of the universe towards the end for which it was made.

In looking at the larger and constructive part of this treatise, it is noticeable that the author dismisses the inquiry into origins as unprofitable, though he is constrained to speak of it once or twice near the end of his work. His attention is directed continuously to the laws and the different orders of evolution, with a distinct view to "ascertaining if a purpose can be inferred from the specific characters which they, [the laws] impart to the orders of evolution. And the orders of evolution are four, pertaining respectively to matter, to life, to mind and to spirit.

*Physical* evolution is the primary form. With it the process began, for it is impossible to conceive of it as eternal. We follow it back from the present phenomena of the universe, step by step, to the beginning of the process. In doing this we pass from masses to molecules, from molecules to atoms, and from atoms to a primeval, universal physical substance, existing at the highest temperature and in rapid motion through all its extent. The first product of evolution in this ocean of energy was a particular kind of atoms. This was followed, sooner or later, by another kind, and this by another, until at last, during the lapse of uncounted ages, the seventy kinds, more or less, which are known to science were formed. All these have persisted, without change of properties, to the present hour. No one of them has ever been seen, but they have nevertheless been weighed and their active properties ascertained.

It is unnecessary, if it were practicable, to describe the different stages in the progress of physical evolution. But it may be interesting

to look at a few sentences which characterize this order of evolution. "We surmise that the law of evolution is to be found in one of three spheres: (1) in the root-properties of the order, or (2) in the circumstances in which these root-properties are placed, or (3) in the connection between the root-properties and their circumstances" (p. 66). "At the base of all evolution lies the evolution of matter, and the law of the evolution of matter is the law of the distribution of energy. Whatever changes take place in the physical universe, they are changes in the form of an energy which remains constant in quantity" (p. 68). "The experience of man, from the first moment when he began to build up his knowledge of the universe, has been steadily confirmatory of the fact that the phenomena of the physical universe are dependent on conditions which are not influenced by the lapse of time" (p. 70). "The root-properties of matter are its gravitative, molecular, chemical, and electrical effects" (p. 76). "That some medium pervades all space is certain. There is conclusive evidence that the atoms of matter, whether we regard them as centers of force or as vortex rings, have definite relations to the portion of the medium which surrounds them; and light or radiant energy demands for its propagation a substance which possesses inertia and rigidity" (p. 81). Mr. Crookes postulates a primal stage of the universe when matter was in an "ultra-gaseous state, at a temperature inconceivably hotter—if such a term could be applied to such a state—than anything now existing in the visible universe. In this state, some process akin to cooling led to the formation of atoms endowed with energy. The substance most nearly allied to the original matter was first formed; then the next, and so on, the lapse of time between each birth of an element being the index to determine its different properties, depending upon the then state of original matter, and following an order of increasing atomic weight" (p. 83). "The forces of the universe are only known in relation to the changes of the universe; and force itself is merely a name for the rate at which energy does work" (p. 87). "There is nothing to warrant us in taking energy to be a product of evolution. Evolution began when change began; but every change is a change in the form or mode of an unchanging energy; and to conceive for a moment that energy is a product of evolution, we should have to inflict on our understanding the fantastic imagination that the first change in the mode of energy was the creation of energy . . . Evolution tells us the story of change; but behind change lie the unchanging constants of the universe, matter and energy,—if, indeed,

these be two and not merely the two different conceptions we are constrained to take of what is really one and the same thing" (p. 92). "We take it as axiomatic that the primary organization cannot be looked upon as an occurrence out of a number of possible occurrences; but it is possible that the secondary and interdependent organizations may be so viewed . . . . The scale on which the operations of nature are carried on is so vast and so varied in degree that it may not unreasonably be assumed that every combination of occurrences possible at a given time has been realized; and that what has occurred has occurred because the conditions of occurrence were such that these and no other could occur" (p. 95).

Finally, "the process of physical evolution is that of a continuous formation of more and more complex relations of matter" . . . . "In all this we make a progression necessarily resulting from the conditions under which the evolution takes place; and we may not, because of any speculative fancy, refuse to this progression its legitimate significance that the order of evolution points forward to some ultimate stage of organization" (p. 98).

*Protoplasmic* evolution is next considered. And on this Morris speaks with great clearness, describing the physical elements and phenomena of protoplasm, and showing how it differs from any combination of chemical substances. "In protoplasm we have thus an order of activities altogether different to those we have met with in the physical order of evolution. And however ingeniously we may seek to link on the protoplasmic structure to the physical states of matter, we cannot fail to see in its properties the rise of a new order of phenomena . . . . We need not hesitate to say that if an hypothesis can be constructed which is able to account for the origin of protoplasm in accordance with the principle of continuity, such an hypothesis must be regarded as more or less probable. But a physical explanation of the structure of protoplasm would in no way account for the energies of life, or enable us to class the activities of life under the category of such physical processes as we have hitherto found to prevail" (p. 101).

He then proceeds to point out the differences between a crystal and a worm. Thus: "A crystal of any substance, when broken up into an amorphous mass, can, by a repetition of the process by which it was originated, be restored again, while in the case of a living body this is impossible . . . . The formation of living matter is universally conceded to be beyond the chemist's power. Protoplasm, living and potent of future modifications, is as unique as the chemical elements

themselves . . . . Even in the assimilative process there are elements which are distinctly peculiar to life. Its relations to the system of energy are characteristic, not so much of the assimilative process in itself, as of the work done by it. The activity of protoplasm in its assimilative aspect consists essentially of two parts, a living agency which is stable, and a non-living molecular stream continually undergoing transformation ; and while the latter is subject to the system of energy, the former is as ultimate a cause of change as the physical forces themselves" (p. 104).

Morris also calls attention to the differences between vegetable and animal life. "Plants in general act upon inorganic substances and convert them into organic ; and animals feed on vegetable tissues, or on the tissues of other animals ; but in both plants and animals the function of assimilation is the same, and takes place under the same conditions . . . . The waste of an animal body is incessant, and food is constantly required, in a great measure already prepared, to supply the loss of tissue ; while in general the plant builds on, and stores up the energy it receives" (p. 118). "The power of movement we find to preserve its original characteristics only in the plant life of the earth, and to have become in animal life modified at a very early stage into the special functions of nervous and muscular tissue." Again, "Assimilation, reproduction, and the power of movement, are the root-properties of life ; and from the basis of these properties, by the assumption of adaptative features, life has progressed on the earth until every available sphere, presenting the conditions suitable for existence, has become filled with appropriate forms of life . . . . Wherever life could live it has lived ; and in every locality a complex order of relations is observed to prevail among the various kinds of plant and animal life which inhabit it. The insect and the flower mutually support, the one the perfect life of the other" (p. 119).

We must not, however, attempt in any way to summarize the facts presented by our author in this part of his work. But the conclusion which he reaches is that the evolution of life is "a continuous adjustment of the root-properties of life to physical relations, under a law of selection in which is represented the physical order. And this, though suggestive of a purpose, carries us no further than the conception of a purpose of which the end is conditioned by the material order ; and the material order points to a time when all life will have died out. The purpose of life cannot, therefore, be the primary purpose of the whole order of evolution," if that order reveals a Divine Father.

*Mental* evolution is treated in the third place, the writer having thus far studiously refrained from treating the connection between vital phenomena and the manifestations of mind. But now he affirms that "mind is not matter, nor are the manifestations of mind activities of force. Matter is made up of physical relations, . . . mind is essentially a consciousness of relations. Neither is mind life, nor are the manifestations of mind vital activities . . . . In truth, the analogies between mind and life are fanciful rather than real ; for to apply the term self-conservation to life is to extend the meaning of it beyond its due limits. Life forms in their protoplasmic aspect are conserved, not self-conserved, and the conservation is in every case nothing more than a mechanical relation established by means of natural selection between the native reacting power of the protoplasmic body and its environment . . . . The state of the case, however, is different with regard to the manifestations of mind and the changes of relation associated with mind . . . . All changes of relation attendant on mental manifestations are, in fact, attendant on the consciousness of relations, and not merely, as in the physical and protoplasmic orders, on mechanical processes" (p. 147). The discussion of this topic is full and satisfactory. There is a section on "The Philosophical Views of Mind," criticising especially the doctrine of Herbert Spencer, another on "The Nervous System as the Organ of Mind," another on "The Physical Side of the Mental Life," another on "The Inner Side of the Mental Life," another on "The Evolution of the Manifestations of Mind in Relation to the Inheritance of the Nervous System," another on "The Further Evolution of the Manifestations of Mind by Means of the Social Bond," and a chapter on "The Manifestations of Mind in Relation to the Protoplasmic Law." Under the last heading a number of very interesting thoughts are presented.

Thus : "When mind had once asserted itself as a primary influence in the order of evolution, under the complex environment resulting from the presence of competing organisms, direct advantage must have been given to the mental adaptability of the individual ; and the spur of want urging an animal to mental activity must have played a considerable part in the evolution of intelligence to meet particular needs. And it is not leaving the solid ground of nature to say that, in view of the positions of the individual as a feeling and thinking unit, the struggle for existence has been the schoolmaster of mind to bring it to perfected self-consciousness " (p. 180). "In the higher stages,



consequently, the character of the order of evolution may be determined by the power of mind" (p. 181). Again: "The dispositions of the universe which make evident a want of beneficence relatively to life are in relation to mind further educive and directive of it. The struggle for existence is the schoolmaster of mind; and what appear harsh in this struggle, relatively to life, are, as it were, the birth throes of mind." "If the physical order be thus subservient to mind, may it not be that those conditions which, when discussing the argument of design, are found to be unfavorable to the well-being of life, and, in relation to life, to directly negative a benevolent plan, are not unfavorable to the order of mind, and are, in relation to the evolution of mind, suggestive of a final cause?" (p. 186) But "this view of purpose, however, as prevailing in mind, is insufficient in itself to infer a divine purpose . . . . To complete our argument, we must discern that the end, to which the purpose in mind is related, is not an end which is determined by the conditions of the material order; that is, we must prove that the laws of evolution operative in the order of consciousness of relations are educive of more than utilitarian elements, and directive to other than material correspondencies . . . . that the adjustments of mind transcend the sphere of the physical order."

In the *spiritual* order of evolution we have what we are seeking, that is, sentiments which transcend the sphere of the physical order, and which are governed by laws independent of the physical order. "Our love of knowledge for its own sake, our delight in beauty and awe at the sublime, our inward monitions of a moral law, and our feeling after God, are all more than utilitarian adjustments . . . . they are also all governed by one and the same law of sympathetic relationship. For this law of sympathy there is no place in the material order of things. By it we are carried outside ourselves into sympathetic union with all things and with God . . . . We therefore escape from all objections that arise out of the character of the material order" (p. 297).

"The sympathetic accord between nature and the intellectual and æsthetic attributes of man proves the divine immanence; and, taken alone, might incline the mind to pantheism. The sympathetic law, however, as manifested in morality, carries us further to the recognition of the truthfulness, righteousness, holiness, and goodness of God. Moral relations are eternal . . . . They are the reflection of the divine image in man, and by the very fact of their presence, however imperfect, in man, their presence in God is known" (p. 238).

Thus, according to Mr. Morris, "all that science has done has been to clarify the conception of God in nature. God has not been removed further from the universe; but the mode of approaching him in the universe has been made more precise. Modes of manifestation that had been thought to be primary have been discovered to be secondary; and, though increase of knowledge has shown the operation of God in nature to be seemingly less and less direct, God has been brought nearer to this universe as a whole. Fuller knowledge of the universe has brought truer interpretations of it; and if we now surrender the argument of design it is only to replace it by the higher idea of eternal purpose."

It may be added that Mr. Morris finds a place in natural theology for asserting the providence and the mercifulness of God and the fall of man. But we have no space for a representation of his course of thought on these topics. Perhaps, however, we may be allowed to propose and answer a single question before closing this review. It is this: If the processes of evolution do not reveal God until they are studied in the operations of the human spirit, why should a writer on natural theology trace them out with so much care in the earlier orders of being, in matter, in life, and in mind? Why not begin with the human spirit, and leave the barren wastes of physical, protoplasmic, and mental evolution to the votaries of science? This question is not answered in *A New Natural Theology based upon the Doctrine of Evolution*. Perhaps because it did not occur to the writer's mind. Possibly his rejection of the argument from order and design in nature led him to look with grave distrust upon any reasoning which is not based on the whole sweep of evolution through the ages. At all events his method is the only adequate one for a believer in evolution as the single solid basis of argument for the existence of God. For how can one who is in search of the true answer to the question of all questions be satisfied with evidence which is not drawn from all parts and ages of the known universe? If there are certain orders of evolution which do not in themselves imply prevision or purpose (which we doubt), it is surely important to ascertain whether they are or are not consistent with a wise and controlling purpose as to the whole: whether, when complemented and explained by other orders of evolution, they favor or antagonize belief in a divine purpose and Ruler.

Yet we think the amount of space given to the exposition of physical and vital evolution is greater than was necessary. A doctrine which can confidently be made the basis of so great an argument

ought to be well understood by the people who are addressed ; but are not the essential facts and hypotheses of evolution generally understood ? It is easy to err in answering this question, and the writer's judgment may be more correct than the reviewer's. Of one thing, however, all who read *A New Natural Theology* will be convinced, namely, that Mr. Morris has done a thorough and scholarly piece of work. They will also be satisfied that as conclusive an argument for the being of God can be based on the doctrine of evolution as the one commonly founded on the evidences of order and design in nature. Slow processes are not less divine than rapid ones. "One day with the Lord is as a thousand years, and a thousand years as one day." And the fullest possible comprehension of the facts will furnish the firmest basis for reasoning.

ALVAH HOVEY.

NEWTON THEOLOGICAL INSTITUTION.

A HISTORY OF THE WARFARE OF SCIENCE WITH THEOLOGY IN CHRISTENDOM. By ANDREW DICKSON WHITE. 2 vols. New York : D. Appleton & Company. 1896. Pp. xxiv+415 ; xiii+475. \$5.

PRESIDENT WHITE has rendered most distinguished service to the cause of truth in publishing the results of his prolonged investigations in this special field of history. Command of time and means, exceptionally favorable official positions, and long training in historical methods, have all combined in the production of a work of very great importance, probably much greater than will appear at first. It is not to be wondered at that the patient examination of an astonishing amount of practically new material through a period of twenty-five years should result in a work which it will take time to appreciate fully. Mr. White has told us that the book is an evolution from the original contest in which he found himself in connection with the founding of Cornell University. He early formulated the following thesis, and by lectures and magazine articles proceeded to defend it :

"In all modern history, interference with science in the supposed interest of religion, no matter how conscientious such interference may have been, has resulted in the direst evils both to religion and to science, and invariably ; and, on the other hand, all untrammelled scientific investigation, no matter how dangerous to religion some of its stages may have seemed for the time to be, has invariably resulted in the highest good both of religion and of science."